



**RE: TESTING OF (3) SAMPLES OF Hancor, Inc 300mm (12") DIAMETER
SMOOTHWALL TYPE 'S' POLYETHYLENE PIPE TO AASHTO
M294M-03 FOR THE ESC PROGRAM**

CONDITIONING: Not less than 40 hours at $23 \pm 2^{\circ} \text{C}$ (73°F)

TEST RESULTS: For ESC audit of Vermont plant December 2005

SECTION 6.1 BASIC MATERIALS

Results:

	DENSITY (g/cm ³)	MELT INDEX (g/10 minutes)	NCLS (Hrs)	CARBON
TRI/Environmental	0.954	0.22	31	2.64
Hancor, Inc.	0.953	0.19	30.6	2.4

SPECIFICATION: Minimum Cell Class 335400C and SP-NCTL 15% 24 hours.
Density .945 to .955 g/cm³
Melt index 0.15 to 0.40 g/10 min.
Carbon Black Content 2% minimum / 5% Maximum
*Compounds that have a higher cell classification in one or more properties with the exception of density are acceptable provided product requirements are met.

CONCLUSION: Specification is met.

SECTION 7.1 WORKMANSHIP

	RESULTS
TRI/Environmental	Pass
Hancor, Inc.	Pass

SPECIFICATION: Free of foreign inclusions and visible defects. Inner liner shall be fused to outer corrugated wall at all internal corrugation crests.

CONCLUSION: Specification is met.

SECTION 7.2 PIPE DIMENSIONS

SECTION 7.2.2 WALL THICKNESS

	INNERWALL THICKNESS
TRI/Environmental	0.062
Hancor, Inc.	0.052

SPECIFICATION: The minimum inner wall thickness requirement is 0.9mm (0.035 in.)

CONCLUSION: Specification is met.

SECTION 7.2.3 INSIDE DIAMETER

	INSIDE DIAMETER
TRI/Environmental	11.9
Hancor, Inc.	11.87

SPECIFICATION: Nominal inside diameter shall not exceed 4.5% oversize or 1.5% undersize and not more than 30mm oversize.
295mm – 313 mm (11.61” – 12.32”)

CONCLUSION: Specification is met.

SECTION 7.4 PIPE STIFFNESS

	ORIENTATION	PIPE STIFFNESS
TRI/Environmental	0 / 45 / 90	60 / 61 / 60
Hancor, Inc.	0 / 45 / 90	62 / 61.1/ 62.3

SPECIFICATION: The minimum pipe stiffness requirement at 5% deflection is 345 kPa. (50 PSI)

CONCLUSION: Specification is met.

SECTION 7.5 PIPE FLATTENING

	RESULTS
TRI/Environmental	Pass
Hancor, Inc.	Pass

SPECIFICATIONS: There shall be no evidence of bucking, cracking, splitting or delamination when the vertical inside diameter is reduced by 20%.

CONCLUSION: Specification is met.

SECTION 7.6 ENVIRONMENTAL STRESS CRACKING

	RESULTS
TRI/Environmental	Pass
Hancor, Inc.	Pass

SPECIFICATION: There shall be no cracking of the pipe.

CONCLUSION: Specification is met.

SECTION 7.7 BRITTLENESS

	RESULTS
TRI/Environmental	Pass
Hancor, Inc.	Pass

SPECIFICATION: The pipe specimens shall not crack or split.
Five non-failure out of six impacts will be acceptable.

CONCLUSION: Specification is met.

SECTION 7.8 FITTING REQUIREMENTS

	RESULTS
TRI/Environmental	Pass
Hancor, Inc.	Pass

SPECIFICATION: Pipe connections shall not separate to create a gap exceeding 5mm (0.197") when measured between the bell and spigot portions of pipe fittings shall not crack or delaminate.

SECTION 11 MARKING

	MFG.	SIZE	PLANT CODE	PRODUCTION DATE
TRI/Environmental		12" 300mm		N/A
Hancor, Inc.		12" 300mm		

SPECIFICATION: Pipe and fitting shall be marked at intervals not more than 3.5m, manufacturer's name or trademark, nominal size, AASHTO M294M, plant code and date of manufacture or appropriate code.

CONCLUSION: Specification is met.

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QUALITY CONTROL MANAGER